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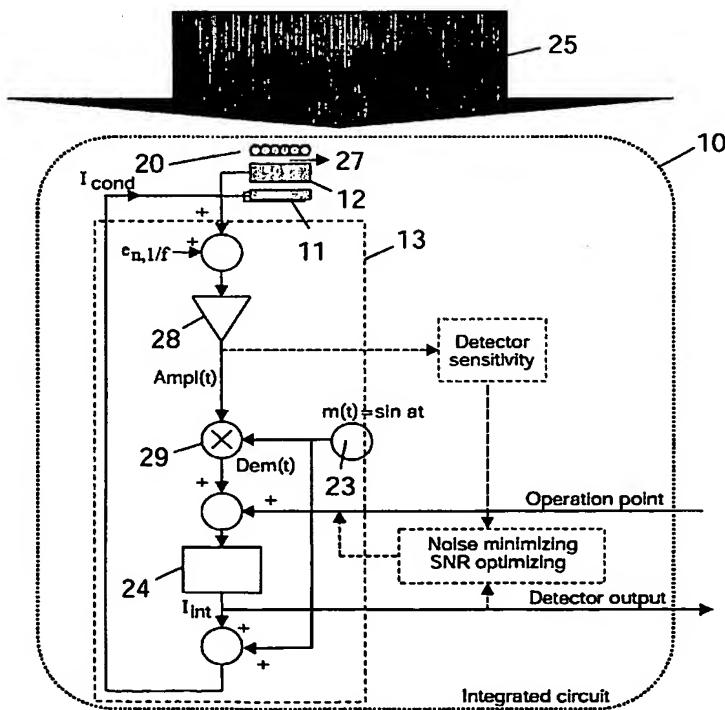
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(54) Title: INTEGRATED 1/F NOISE REMOVAL METHOD FOR A MAGNETO-RESISTIVE NANO-PARTICLE SENSOR



(57) Abstract: The present invention provides an integrated circuit and a method for noise removal in a magnetic nano-particle sensor device. The method of the present invention comprises the steps of sending a conductor current through a conductor to generate a first horizontal magnetic field component at the location of a magneto-resistive sensor. In a further step the optimal operation point of the magneto-resistive sensor is determined by minimising the noise at the output of the magneto-resistive sensor by means of a noise optimisation circuit. By applying an external magnetic field such that nano-particles in the vicinity of the sensor are vertically magnetised, a second horizontal magnetic field component is generated at the location of the sensor. Then, the conductor current is adjusted such that the first horizontal magnetic field component compensates for the second horizontal magnetic field component. The magnitude of the conductor current necessary for this compensation is a measure for the amount of nano-particles present at the sensor.

**Declaration under Rule 4.17:**

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